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A COGNITIVE MAN AND A LANGUAGE REPRESENTATION. SOME OBSERVATIONS ON THE WAYS OF MENTAL RECORD OF INFORMATION

The psychological studies show that a man stores information in his mind, in the form of cognitive-semantic models or schemes. The aim of the following paper is an attempt to systematize approaches and ideas concerning the information representation in language. This research will present the psychological findings which provided some new methods of a language description, then some of the notions (introduced by G. Fauconnier, Ch. Fillmore, J.-P. Desclés, M. Johnson, G. Lakoff, R. Langacker, J. Sowa, R. Schank and R. Abelson), which describe the semantic structure will be discussed. The author will try to demonstrate that this variability of theories and ideas refers in fact to one and the same problem, which is the conceptual record and representation of perceived reality, which actually takes the symbolic form anchored in language.

The concept of describing a language which characterizes cognitive linguistics is based on the relations between perception, cognition and language. In other words, the language will be discussed as a symbolic record in the form of schemes or models, lexical and grammatical structures functioning in a language which represent our knowledge about the world. Knowledge, however, appears to be an extremely complex and interdependent collection of mental entities originating in the process of cognition initiated by the experience of reality. To experience reality means to receive, by the use of senses, different impulses on the basis of which people create notions. This is frequently referred to as the process of conceptualization. Categorization, on the other hand, is the process in which we define everything what is perceived or felt. R. Langacker (1995) defines conceptualization as a mental experience comprising of sensor-like experience, and a process of creating new notions and contextual knowledge. Categorization is defined as a man's ability to recognize notions and to give them meanings.

A new concept of a category formed on the basis of a prototype was formulated in the works of E. Rosch (1978). The research results of E. Rosch and her succes-

sors can be summarized in the following way: a man categorizes the world on the basis of the so called cognitive universalism, stemming from biological-psychological conditions and cultural relativism since categorization is a historical and cultural product as well.

The categories possess inner prototype structure which means that the place in a given category depends on the degree of similarity to a prototype which makes its center. Thus, the organization of the categories does not depend on vital and sufficient features, common to all elements of a given category, but on the collection of typical features shared with the prototype. The fact of belonging to the category is based on the principle called family resemblance. But the limits of the category are blurred, which as a result can lead to the change of category organization. The categories are defined holistically and make up a hierarchical system of relations. Prototypes are privileged categories because they include the most indispensable information and they are the quickest to learn and to memorize. They somehow build the base level to which we refer the moment we experience and define reality.

The notion of a prototype apart from difficulties connected with its definition found an important place in linguistic theories and has provided the basis for creating the so called semantics of the prototype (Kleiber 1990).

Seeing that the reality is conceptualized in cognitive terms it follows that mental structures are the starting point of their possible verbal expression. Thus cognitive structures manifest themselves through symbolic structures, that is in a language. The observations mentioned above determine the research subject of cognitive linguistics – that is semantic or semantic-cognitive representations together with the results of categorization expressed in the use of language.

When formulating their theories cognitive linguists refer very often to a notion of a mental representation. This term appeared for the first time in the works of psychologists who carried out research aimed at studying the ways of recording information, that is a memory, founded by R. Shepard (1971). Together with J. Metzler and S. Kosslyn, he conducted research which revealed that in the moment of solving problems people use not only data of symbolic nature, but also the ones which are almost iconic-like. It means that they are able to form and operate mental figural representations. According to Kosslyn's theory (1980), concepts and sentences that is a language make the basis for creating mental pictures. They belong to a language-like memory which should be distinguished from a picture-like memory.

P. Johnson-Laird (1983) modifies the opinion about a mental representation emphasizing its schematic nature because not all phenomena taking place in the world can be described in the form of a picture. As a result he introduces a notion of a mental model, an abstract figure more or less schematic, corresponding to a fragment of reality. He states that "because mental models can take different forms and fulfill different aims their content is varied. They can include only symbols representing only units and the relations between them, just as in models which are used in syllogistic reasoning. They can show spatial relations between objects and casual; or temporal relations between events" (1983: 410). If that is the case he distinguished 3 types of mental representations including statement representations and

mental models corresponding to real objects having a definite structure and pictures which, as it were, make a collection of a few mental models. It seems obvious that a man not only possesses the ability to form models, but also he can manipulate them to formulate opinions and transfer them to other people giving them a form of a language expression.

Then, the fact of distinguishing by B. Darras (1998) a visual thought referring to visual perception and a figurative thought referring to a cognitive feature and to the world reconstruction, helped the scientist to describe two types of mental representations. These are similes which are the copy of the reality so they are characterized by a high level of similarity to perceived reality and schemes which are abstract representations of general or specific character.

Summing up psychological research on information record it should be said that mental representation is connected with the mechanism which makes it possible for an individual to form inner representations of figurative character which are called pictures, schemes or models depending on the degree of notion abstractness. These, in turn, correspond to categories which include all our knowledge of the world. They are stored up in a permanent memory and can be put into motion by new cognitive or emotional experience which manifests itself in our verbal and non verbal behavior. They have a form of complete spatial structures either dynamic or static with different levels of organization.

However not only psychologists have been interested in a human thought the way of its record and the role it fulfils in human life. Together with the appearance of a scientific project of creating a man's model, the problem of reconstructing thought rights, its simulation and representation became the core of interest of information technology specialists. This was the moment when scientists started to speak about Artificial Intelligence.

The achievements in neurology have played an important role in the development of connectionism, one of the Artificial Intelligence studies. which is called. The question is how to build a model being a reflection of links between neurons. Nowadays such a model is called a self adapting neuron-like network. These are circuits consisting of multi stratified links which are able to form representations of real phenomena, or so called patterns, and to recognize them on the basis of partial information, classify them and also to identify reality. According to R. Gregory (2000: 55) "there are grounds to believe that the systems operating on the basis of parallel diffused transformation principle will recognize a language and talk sensibly although it remains unknown how they should acquire consciousness."

As for the works from the field of psychology and Artificial Intelligence there is one that must be mentioned, R. Quillian's theory of semantic networks (1968). According to R. Quillian a man is able to find the meaning of a word by linking it to all other meanings, which somehow define the word. The meaning, what follows, does not have an absolute character but it depends on other meanings that are hidden in a semantic memory of associative nature. The suggestion of the model is to treat this memory as a system consisting of knots of access. These knots are concepts in the form of units or properties while the links between them called arcs

which give information about the type of semantic relation. This theory contributed to the development of computer programs which helped automatic translation. One of the works which, inspired by the notion of semantic network, and certainly worth mentioning, is the theory of conceptual graphs by J. Sowa (1984).

The theory of conceptual graphs is not concerned with meaning of the words, but with their meaning in sentences. The system of conceptual graphs consists of a collection of canonical sentences which specify models of semantic-syntactic relations. The truth value of a sentence as well as its grammatical correctness are determined by comparing the graph corresponding to it with the canonic graph. Like in Quillian semantic network, each graph consists of access knots which relate to notions and relations between them. These relations, in turn, possess one or more arches which join notions. The notion has the form of a prototype model representing generative object which is compared to sentence expressions corresponding to a given notion used in the graph. As it can be seen, the suggestion to interpret sentence information put forward by J. Sowa is based on the theory of types and is also of association character.

In 1975, M. Minsky among others define the notion of a frame. In Psychology a scheme is understood as a collection of concepts describing a situation, a condition or a past event, which have been recorded in a memory and which are recalled by us in new situations or events. The author of this theory defines the frame as the structure of information which represents a stereotype situation. It is the collection of features that characterize a notion. These features describe certain facettes of the given notion, they are either of declarative or procedural nature and they make certain kinds of sub-frames distinguished on the basis of features hierarchy is. So it follows, that a human mind is a network consisted of frames which in turn consist of access knots and relations. This system has a hierarchical structure based on feature inheritance. Minsky's theory was to show a mechanism of setting into motion only some specified information from our knowledge when solving different kinds of problems in real life situations.

Inspired by the frames theory, R. Schank and R. Abelson (1977) introduce a notion of a script or a scenario into a model of knowledge and they define it as a structure of information corresponding to our knowledge of a certain type of a situation. This script is of procedural nature, it does not describe notions but scenes from everyday life. Every scene is described with the use of a certain collection of conceptual primitives (there are 11 of them) describing physical activities, global activities, and instrumental or mental activities.

There is no doubt that a fundamental importance of imagery in a description of linguistic phenomena was emphasized by R. Langacker (1987) in his cognitive grammar. A notion of the imagery explains the role of a language as a medium of expressing different ways of describing the same situation, condition or an event. These representations, called scenes by Langacker, differ in stressing some aspects or elements of a perceived object, phenomenon or a situation, a degree of their characteristic, perspective from which they are seen and they are the source of meaning on which grammar depends on. The imagery, what follows, is understood as a mental

process depending on constructing a scene, which has the following dimension: 1. the level of schematization, 2. background that is a context which proceeds a situation, our expectations connected with it, presupposition, 3. perspective which reflects the direction of mental scanning, that is, a point from which we see a scene, 4. profiling being based on distinguishing from a cognitive basis certain notional structures which are the basis for predication that is for forming semantic structures and taking adequate language forms. As it can be seen, when discussing the notion of profiling. R. Langacker refers to the notion of a domain that is a definite experience having a gestalt form. The domains are a starting point for categorization and categories, which in turn make the basis for formulating statements. According to R. Langacker, categorization takes place either by a prototype or by a scheme. In the first case we refer back to our basic knowledge and in the second case we specify an object or situations in relation to the scheme. Therefore prototypes and schemes would make categories, that is, the elements of our knowledge being a point of reference when identifying new objects, situations or events.

When discussing imagery, R. Langacker describes other mental operations including mental scanning, selection, abstraction or comparison on the basis of which a man designs a scene.

Making a mental representation involves formulating meanings by referring to our knowledge stored in our memory and to our knowledge which follows from the context: "A meaning of an expression is not only the collection of cognitive substance but also it is composed of conventional imagery that take part in formulating cognitive content provided by the recalled domain" (R. Langacker 1995: 18). Putting it differently, every impulse coming from the world puts into motion definite categorical elements of our knowledge, including categories and this mechanism makes the basis for creating meanings, which finally take a verbal form so they refer to definite language categories. Therefore, every statement is a reflection of a mental model of iconic nature.

Since the process of imagery is anchored in perception its results are spatially-temporal. They form a kind of space in which a representation is created on the basis of descriptive mechanics, called symbolic space by R. Langacker. A language is understood as grammar functions in this space. Grammar then is defined as a structural catalogue of conventional language units which are anchored in two other spaces – phonological and semantic. The latter is defined as a place where conceptualization takes place that is giving meaning to representations. All language units and in consequence categories corresponding to them can be described in the form of iconic model more or less schematic.

Discussing the main assumptions of Langacker's theory we must not forget to mention the phenomenon of interdisciplinarines which is reflected in the terminology suggested by a researcher and in the meaning of a relation existing between perceiving the world, that is its mental experiencing and mental operations, the result of which are notional structures of iconic character, a different degree of abstractness and a language in which notions become language categories that are used to form a statement.

Taking into account the purpose of research that is a description by the structure of thought, the process of ideas mixing together can also be observed in the field of linguistics itself. It is common knowledge that we should mention here the theory of idealized cognitive models by G. Lakoff (1987), the semantic of frames by Ch. Fillmore (1985), the theory of mental spaces by G. Fauconnier (1984) or the application and cognitive grammar by J.P. Desclés (1990).

G. Lakoff defines an idealized cognitive model (IMC) as a complex, structured entity by the use of which we organize our knowledge and the by-products of this organization are category structures and prototype effects. IMC can take the following form: 1. propositional structure, 2. notional-schematic structure, 3. metaphorical or metonymical expansion. IMC are anchored in a language, in statements made by us very often of metaphorical or metonymical character.

For Ch. Fillmore a frame will be a sort of a scheme including information concerned with experience and representing a given object or a situation. It is recalled in a definite situation and it makes possible for the reality to be identified. Putting it differently, words that we use in a given context call for an interpretative frame constituting a background for every figure and by which we understand a meaning of a given statement. A certain type of relation makes it possible to identify the figure from the background. Fillmore's aim was to find and describe relations which oven the elements of a language.

The theory of mental spaces by G. Fauconnier is also based on recalling structures of our knowledge belonging to different initial spaces emerging in a specific situation. A mental operation called a conceptual integration makes it possible for a generative space to emerge which is a common space for initial spaces and an integrating space of information from the initial space has taken place and which reflects itself in language forms.

J.P. Desclés distinguishes three levels in the suggested model of grammar. These are: 1. cognitive level where there are cognitive archetypes which are reflections of our biological behavior and as a result they are independent of natural language. 2. genotypical level in which archetypes are transformed into cognitive-semantic schemes, that is, abstract forms which are configurations of archetypes and corresponding to universal language units (grammatical) 3. phenotypical level where the interpretation of cognitive-semantic schemes through/by the structure of the definite natural language takes place.

All these theories, although completely separated by methods and goals, emphasize the existence of a sort of space or level in which our knowledge is formed. It would be the space bringing together all which is seen by the use of senses and that what is expressed in the categories of a natural language and it would make a specific architecture of interpreted notion.

The fact of introducing the notion of a imagery into a language description turned out to be revolutionary for two fundamental reasons. First of all, it contributed to intense development of linguistic research inspiring and encouraging a great number of young people to carry out intensive studies of language nature and functions opening up possibilities of their development on the way of penetrating the secrets

of human thought. Secondly it created new possibilities as far as the process of teaching is concerned especially when talking about foreign languages. The cognitive psychology says that knowledge is not acquired, it is created and formed. This kind of approach based on the belief that the reality, including a language one, is constructed or to be more precise reconstructed, brings much more better results because students themselves are the creators of their knowledge and they acquire it better, remember easier – they are more creative and less tired. In this process they use cognitive abilities to comprehensive understanding of a situation or a problem, to make categorizations with reference to a prototype or a scheme or to record information in the form of a representation more or less schematic. All these cognitive abilities as well as mental operations, on the basis of which the process of transforming information in brain and giving it a language form takes place are the characteristics of a cognitive man whose functioning in the world is determined by the act of seeing. And the act of seeing precedes the words as a picture comes before a language. The language makes a frame for the picture and the frame itself seems to be beautiful for only a few. Therefore in order to examine and describe the language it is necessary to learn the nature of thoughts because a thought is a image of which a cognitive man is the creator.

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